

REMARKS

Claims 1-8 and 10-20 are pending in this application. Claim 9 has been canceled without prejudice. Claims 6, 7, 10, 12, and 14-20 have been withdrawn, as allegedly being directed to non-elected subject matter. These withdrawn claims are within the scope of pending claims 1 and 11 and therefore comply with the requirements under M.P.E.P. § 821.04(a) and (b) for rejoinder. Upon a finding that independent claims 1 and 11 are allowable, the non-elected, dependent claims must be rejoined.

Independent claims 1 and 11 have been amended to recite that the polymeric quaternary amine cure accelerant is present in the composition in an amount representing at least 55% of the combined weight of accelerant and protein-based component. Support for this amendment is found, as an example, in the last sentence of paragraph [0051] of the specification.

Dependent claims 8 and withdrawn claim 12 have been amended to recite that the soy protein component is provided in the composition in an amount of at least 10% of the combined weight of said accelerant and said protein-based component. Support for this change is found, *inter alia*, in paragraph [0033] of the application.

New dependent claim 21 has been added and recites that the soy protein is in a modified form that is chemically or enzymatically hydrolyzed, acylated, oxidized, reduced, or denatured. Support for this claim is found in paragraph [0022] of the specification.

The amendments add no new matter, do not raise any new issues, and do not require a new search.

The Rejection of Claims 1-5, 8, 9, 11, and 13 under 35 U.S.C. § 102(b) or (in the alternative) under 35 U.S.C. § 103(a)

Claims 1-5, 8, 9, 11, and 13 stand rejected under 35 U.S.C. § 102(b) as being anticipated by, or obvious over, PCT publication WO 99/61538 (“Kretzschmar”). The rejection of claim 9 has been rendered moot by the cancellation of this claim. Applicants respectfully traverse the rejections of claims 1-5, 8, 11, and 13 insofar as they apply to these claims as now amended.

The pending claims are directed to thermosetting adhesive compositions, *e.g.*, for binding cellulosic materials in the manufacture of wood composite products such as particleboard or fiberboard. The compositions comprise a protein-based component and a polymeric quaternary amine cure accelerant. To advance prosecution, independent claims 1 and 11 have been amended to recite that the accelerant is present in the compositions “in an amount representing at least 55% of the combined weight of said accelerant and said protein-based component.”

Applicants have found that surprising wood particulate bonding characteristics result from the use of at least 55 wt-% of the accelerant, based on the combined weight of accelerant and protein-based component, in the adhesive composition:

In cases where the polymeric quaternary amine cure accelerant suspension was mixed with an aqueous suspension of the soy protein component, **an acceptable IB strength was obtained using a press time of only 3 minutes**, when the polymeric quaternary amine cure accelerant was added in an amount representing at least 55% of the combined weight of the cure accelerant and soy protein component.

Paragraph [0051] (emphasis added).

This composition not only provided an acceptable internal bond strength after a short, 3-minute press time, but also resulted in a **significantly** higher internal bond (IB)

strength after a 4.5-minute press time, relative to compositions comprising lower percentages of the accelerant. See Table 1, showing the average IB strength measured for various protein/accelerant blends. Using a 4.5 minute press time, the composition comprising 55 wt-% of the accelerant (relative to the combined accelerant and soy protein weight) provided an exceptionally high average IB strength of 124 psi. In contrast, the average IB strengths resulting from compositions comprising 9.7 wt-%, 12 wt-%, and 35 wt-% accelerant were only 87, 33, and 37 psi, respectively.

The applied Kretschmar reference fails to describe or even suggest a protein-component containing adhesive composition, comprising a polymeric quaternary amine cure accelerant in an amount representing at least 55% of the combined weight of the accelerant and the protein-based component, as claimed. Instead, Kretschmar deals with protein compositions containing about 0.1-25 wt-% of a crosslinking agent. See page 4, lines 26-27 and page 15, lines 30-31. Such compositions are designed to be “easily washed off [of objects] after having served as temporary protective coatings.” See page 4, lines 8-10. In particular, the coating “films” described in Kretschmar “may be removed easily by water treatment and with the help of mechanical force, detergents and/or with proteolytic enzymes.” See page 4, lines 16-18.

Therefore, nothing in Kretschmar, which is directed to **coatings**, would fairly suggest high-strength wood bonding **adhesives** comprising a polymeric quaternary amine cure accelerant, in an amount representing at least 55% of the combined weight of the accelerant and the protein-based component. In fact, Kretschmar explicitly teaches the use of lower amounts, 0.1-25 wt-%, of the accelerant and therefore **teaches away** from the invention of independent claims 1 and 11. This teaching away in the art amounts

essentially to a *per se* demonstration of lack of *prima facie* obviousness. *In re Dow Chemical Co.*, 837 F.2d 469, 5 USPQ2d 1529 (Fed. Cir. 1988); *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Nielson*, 816 F.2d 1567 2 USPQ2d 1525 (Fed. Cir. 1987).

For a claim to be anticipated, every element and limitation of the claimed invention must be found in a single prior art reference. *Karsten Mfg. Corp. v. Cleveland Golf Co.*, 58 USPQ2d 1286, 1291 (Fed.Cir. 2001). (emphasis added). Likewise, to establish a *prima facie* case of obviousness, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *In re Royka*, 490 F.2d 981, 985, 180 U.S.P.Q. 580, 583 (C.C.P.A. 1974) (emphasis added).

Amended independent claims 1 and 11 (as well as their dependent claims 2-5, 8, 9, and 13) recite adhesive compositions comprising a polymeric quaternary amine accelerant that is present in the compositions “in an amount representing at least 55% of the combined weight of said accelerant and said protein-based component.” Because Kretzschmar fails to describe or even suggest at least this claimed feature, the pending claims are patentable over Kretzschmar, whether applied under Section 102 or 103 of the Patent Statute. The above arguments apply with equal force in favor of the patentability of new dependent claim 21.

Reconsideration and withdrawal of the rejections under 35 U.S.C. §§ 102(b) and 103(a) are respectfully requested.

CONCLUSION

In view of the above remarks, all pending claims of this application are believed to be in condition for allowance. A written indication of the same is respectfully requested. This response is believed to completely address all of the substantive issues raised in the Office Action mailed November 24, 2006.

Respectfully submitted,
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